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Cargo Compartment

A minimum cargo compartment temperature of 45°F will be provided with air taken from the engine compressors or the auxiliary power plant as shown. The high pressure manifold delivers 400°F air to the jet pump which mixes cargo compartment and turbine exhaust air and delivers it to the cargo compartment from outlets on the side walls.

Compartment temperature is controlled automatically by a thermostat which controls the flow of bleed air into the jet pump.

ICE PROTECTION SYSTEM

Ice protection of the airframe components is accomplished by de-icing the airfoils and anti-icing the radome, nacelle lips, windshields, parting strips, and air conditioning ram air scoops.

Compressor bleed air from two high pressure bleed ports of each engine is passed through a heat exchanger in each nacelle where it is cooled for safety reasons to 400°F. This temperature is maintained by controlling the amount of ram air used as coolant in the heat exchanger. The engine bleed air then enters a high pressure manifold and flows toward the fuselage where the air to be used for ice protection is taken from the manifolds, reduced in pressure by two pressure regulators mounted in parallel, and then flows into the low pressure ice protection manifold. When the ice protection system is not operating, these pressure regulators act as shut-off valves and are closed.

De-icing air is periodically distributed by means of cycling valves among eight segments in each wing and eight in the empennage, air being supplied to one segment in each of these three components simultaneously. The air is cycled automatically by either one of two cycling valve timers mounted at the systems engineer's station. The quantity of heat supplied to the de-iced segments is controlled by manually setting the "on" time; i. e., the length of time that the cycling valve in a de-iced segment is open. To ensure minimum temperature losses, insulation will be provided for all ducting and some continuous hot air flow maintained in all manifolds during operation of the ice protection system.

Under icing conditions, spanwise parting strips located near the stagnation point of the horizontal and vertical stabilizers are continuously heated with hot air. The parting strips break the ice cap that forms on the airfoil nose section into two pieces, assuring efficient shedding of the ice when the de-icing heat is applied. Parting strips are not needed in the wing since this airfoil is more blunt than the stabilizers and will shed the ice cap by means of the de-icing air alone.

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